III. Market Concentrations under the Horizontal Merger Guidelines

76. In the conduct of its enforcement responsibilities in connection with mergers, the US Department of Justice and the Federal Trade Commission rely on the ***Horizontal Merger Guidelines*** to provide businesses and consumers with a clear articulation of the methods and standards that the agencies employ to evaluate the competitive effects of transactions.[35]

77. The ***Horizontal Merger*** *Guidelines* provide an economic framework that is particularly useful for the examination of competitive issues relating to the definition of relevant geographic and product markets. In this proceeding, Terry L. Murray, another witness for Covad, has already made use of the *Guidelines* to assess particular issues relating to certain unbundled network elements (UNEs) that are under review by the Commission in this proceeding.

78. Under the ***Guidelines,*** market participants are identified and attempts are made to assess the market "share" that can be assigned to each such participant. These measures of market share form the basis of calculations of market concentration under the Herfindahl-Hirshman Index ("HHI").

---

[35] US Department of Justice and the Federal Trade Commission, *Horizontal* ***Merger*** *Guidelines,* issued April 2, 1992, revised April 8, 1997.

79. The HHI is calculated by "summing the squares of the individual market shares of all participants. Unlike the four-firm concentration ratio, the HHI reflects both the distribution of the market shares of the top four firms and the composition of the market outside the top four firms. It also gives proportionately greater weight to the market share of the larger firms, in accord with their relative importance in competitive interactions."[36]

80. Under the *Guidelines,* a market that was entirely controlled by a single firm would have an HHI of 10,000 (100 * 100). A market that was controlled by two firms, each of which held 50% of the market, would have an HHI of 5,000.[37] If the two firms had unequal market shares, the HHI would be higher than 5,000. For example, if a market were controlled by two firms, one of which held 70% of the market, while the second firm held 30%, the HHI would be 5,800. Thus, with only two firms, the HHI would necessarily be at least 5,000.

81. There is no doubt that a market with an HHI of 5,000 or more is a highly concentrated market under the *Guidelines*. The *Guidelines* state that if a market's Post-Merger HHI is above 1,800, the agency regards the market to be highly concentrated.[38] Mergers producing an increase in the HHI of more than 50 points in highly concentrated markets post-merger potentially raise "significant" competitive concerns...[39]

---

[36] *Horizontal merger Guidelines,* Section 1.5.

[37] *(50* 50)* plus *(50 * 50)* = 2,500.

[38] *Horizontal Merger Guidelines,* Section I.51

[39] Id.

82. The most favorable possible way to apply the HHI analysis to the ILECs would be to assume that the market includes only broadband access to the Internet and includes both businesses and residences in one market. By using these assumptions, we discount entirely that the ILECs control over SO% of access to the Internet through dial-up. We also ignore the fact that cable is not meaningful competition when the customer is a small business. Yet even limiting the analysis in these ways, there is only one technology, cable modems, that provides any real (albeit limited) competition to the DSL services offered today. If there were no possibility of line sharing, there would be only one provider (the ILEC) of DSL services effectively constraining the price to such customers and one provider (the franchised cable operator) of cable modem services to at least some of the same customers. In other words, there would effectively be at most two providers of broadband services and its provision would be highly concentrated under the *Guidelines*.

83. One way to recognize the degree of market concentration that would exist for broadband Internet access absent line sharing is to view those services as if a merger between a single, successful, line-sharing CLEC and an ILEC was now being proposed.

84. Let us assume the following market shares in a "broadband Internet market": cable modem provider = 50%, ILEC = 30%, CLEC 20%. Even with CLEC competition, this market would still be highly concentrated with a pre-merger HHI of 3,800. Nevertheless, the proposed merger would increase the HHI from 3,800 to 5,000, a change of 1,200 points. The agencies would thus be confronted with a highly concentrated market,

post-merger, and a proposed increase in HHI that far exceeded the 50 point threshold. There is little doubt that the agencies would readily oppose such a transaction.

85. All else equal, market concentration affects the likelihood that one firm, or a small group of firms, can successfully exercise market power. Market power, to a seller, is the ability to profitably maintain prices above competitive levels. The result of an exercise of market power is a transfer of wealth from buyers to sellers or a misallocation of resources. Sellers with market power also may lessen competition on dimensions other than price, such as product quality, service, or innovation.

86. As set forth earlier in this Declaration, it appears that, by any definition, the ILECs continue to possess market power. It also appears that the ILECs historically have chosen to exercise that market power through higher prices for DSL services and through delays in the introduction of innovative services including DSL itself in the mid-1990s and SDSL services. The behavior of the ILECs can readily be understood as an exercise of market power.

IV Intra-DSL Competition

A. The California Experience

87. As noted above, according to the FCC's most recent statistics, US cable modem penetration currently exceeds ADSL penetration among residential and small business customers by a factor of 1.8 to 1.0. However, in fact DSL penetration is even more significant in some areas of the country than others. In the state of California, for example, more subscribers are now served by DSL than by cable modem services. The California Public Utility Commission's ("CPUC") own statistics indicate that in California, there are 735,677 (ADSL lines (provided by both ILECs and CLECs) and 609,174 cable lines in service.[40] Furthermore, the Commission's more current Form 477 data indicate that, as of December 2001, there were 928,345 **ADSL** subscribers versus only 786,789 cable users in California. By these most recent figures, ADSL technology is now used to serve 45% of the broadband users in California, versus only 39% for cable modem.[41]

---

[40] Letter to William Maher, Chief, Wireline Competition Bureau, Federal Communicalions Commission from Jason D. Oxman, Vice President and Assistant General Counsel, Covad Communications Company, October 1 I, 2002, **page** 2.

[41] Letter to Marlene Dortch, Secretary, Federal Communications Commission, from Praveen Goyal, Senior Counsel, Covnd Communications Company, November 15.2002, at Attachment 2. The remaining 16% **of** subscribers are served by "other" broadband services, which as described above include **types** of DSL other than ADSL.

88. **As** noted in other filings by the company, Covad launched its own competitive DSL service offerings in California earlier than in any other state. Covad's launch of DSL services was accompanied not by **a** decrease, but by an ***increase*** in DSL provisioning from the ILEC. Accordingly, the high DSL penetration in California reflects the results of a sustained competitive struggle between CLECs and the dominant ILEC of almost five year's duration. In this period, Covad and other CLEC's introduced ADSL pricing and service options to which the incumbent ILEC, Pacific Bell/SBC, sought to respond. **As** part of its response, in 1999, Pacific Bell announced that it would "nearly triple its current deployment and offer ADSL services in 255 wire centers that serve 70 percent of its customers. By the end of 1999, five million residential and 900,000 business customers will be ADSL-ready."[42] Thus, there is little doubt that in California at least, CLEC entry into DSL competition was met with major increases in DSL investments by the dominant ILEC.

89. In its own filing with the Commission, the California PUC has argued that "the fact that Pacific/SBC has successfully promoted DSL service to customers under the current regulatory environment to the point of outstripping cable modem service makes clear that the current regulatory environment is conducive to, and does not impede investment in broadband technology by the ILEC." [43]

---

[42] Id. **page** 2.

[43] CA PUC Comments, page 8

B. Serving Wholesale Customers for DSL

90. In this case, Covad is seeking to preserve unbundled access to the high-frequency portion of ILEC loops in order to provide DSL services over shared lines. It is important to recognize however, that despite the fact that Covad's DSL services are provided over shared lines, the services offered by Covad are not identical to the DSL offerings that the ILECs make over their own lines. In particular, Covad's services to large wholesale customers such as ISPs differ in important respects from the wholesale DSL services now offered by the ILECs.

91. Covad is a national provider of DSL services. Unlike the RBOCs, Covad's services are not limited to specific geographic territories within the United States. For this reason, unlike the RBOCs, Covad can and does offer true nationwide services to potential wholesale DSL customers.

92. Covad's DSL network now offers the ability to reach 40 million end users nationwide through one, integrated OSS system. This feature alone is particularly important for nationwide residential ISPs such as AOL and Earthlink.

93. For large ISP customers, the ability to link their own OSS system to a single Covad OSS means that OSS functions such as customer pre-qualification, order entry, order status and others can be readily scaled up for large volumes of traffic. By contrast, national ISPs seeking to offer DSL services from the RBOCs are forced to link their OSS systems to multiple RBOC OSS systems with attendant incompatibilities in both function and process.

94. In addition to a single, nationwide OSS system, Covad also offers nationwide ISPs individually tailored integrated value-added services such as technical support for the entire Internet connection including the DSL loop, CPE and the ATM backbone. Covad now operates the second largest ATM backbone in the United States. By contrast, the ILECs only offer regional backbone services and have not deployed ATM switching capabilities on a nationwide basis.

95. Beyond these advantages, Covad also offers to its wholesale customers greater customer choice than the ILECs offer through different product pricing tiers, ADSL services on longer loops up to 18,000 feet where technically feasible, and alternatives to ADSL including IDSL and SDSL broadband options. All of these features and options serve to distinguish the DSL services of the ILECs from the DSL services offered by Covad and other CLECs. Absent intra-modal competition from the CLECs, there is no reason to expect that the ILECs would ever begin to offer these functional and service innovations to wholesale or retail customers.

V. Line Sharing and Future Investment Levels

96. As noted above, in California, ADSL line counts now exceed cable modem line counts. Importantly, Pacific Bell/SBC provides the vast majority of those ADSL lines to its own retail customers rather than to CLECs such as Covad. This growth in ADSL lines has occurred in response to or, from the ILEC point of view, despite, the early and effective implementation of DSL line sharing rules in California. For these reasons, the California experience provides real world evidence that current regulatory policies, including line sharing promote and do not impede investment in broadband technology by the ILECs. Moreover, the California experience demonstrates fundamentally that broadband DSL can and does compete decisively against inter-modal competitive technologies including cable modems.

97. Nevertheless, various ILEC witnesses in this proceeding have put forth both broad-based and more specific arguments that bear on the issue of ILEC incentives to invest in their own facilities if they must also unbundled the high-frequency portions of their loops. These broad-based arguments do not focus on line sharing *per se* but rather seek to undermine the broader policy of all UNE unbundling including line sharing. AT&T witnesses Robert Willig. William Lehr, John Bigelow and Stephen Levinson have termed this broad-based attack on unbundling as the

Investment Deterrence Hypothesis.[44] More specific attacks on the unbundling of ILEC copper loops appear in the Declarations of Howard A. Shelanski and of Alfred Kahn and Timothy Tardiff.

Investment Deterrence Hypothesis and Line *Sharing*

98. In this context, the *Investment Deterrence Hypothesis* argues essentially that the unbundling and/or sharing of ILEC facilities and the leasing of those facilities at TELRIC derived prices discourages new investment by the ILECs. Allegedly the ILEC incentive to invest is reduced because, with unbundling and/or line sharing, future ILEC investments will he less profitable than they would otherwise be.

99. At the outset, it must be recognized that the proponents of the *Investment Deterrence Hypothesis* remain silent with respect to the pre-1996 Act or pre-Line *Sharing Order status quo.* They offer no proof to support the counter-intuitive claim that somehow, absent competitive pressure, the incumbents will nonetheless cut prices and introduce new products and telecommunications services anywhere.

100. ILEC witnesses do not even attempt to defend the *status quo* because for numerous telecommunications services, including specifically Internet access, there is no real defense they could offer. Telecommunications markets are highly concentrated and both history and economic theory

[44] Robert Willig, William H. Lehr, John. B. Bigelow and Stephen B. Levinson, *Stimulating Investment und the Telecommunications Acr of 1996*, October 11, 2002, pages 1-2. (Hereinafter "Willig et. al.").

agree that such markets produce high prices, low output and a lack of innovation.

101. As noted earlier in this Declaration, absent line sharing, the provisioning of Internet access will remain highly concentrated. Absent line sharing, there is little reason to believe that future ILEC investment in DSL equipment would even remotely approach the investment levels that would be required if the ILECs were compelled to compete vigorously with CLECs for broadband services. Competition not only lowers prices, it enlarges markets and larger markets in turn require increased investment. If the Commission were to eliminate line sharing and maintain fully the market power of the ILECs, the inevitable results will include reduced output as well as higher prices. It is only the sub-optimal level of investment needed to serve this reduced output that would continue if the provisioning of these services remains as highly concentrated as it is today.

102. Furthermore, even assuming the counter-intuitive claim of the ILECs that, absent line sharing, they would dramatically increase their investments, their claim clearly makes little sense in the specific case of the shared, high frequency portion of existing loops. For existing loop facilities, there is no new or incremental investment to be discouraged. In existing ILEC loops, it is only the high frequency portion of the loop that now lies unused (and ready to be shared). The loop itself already both exists and generates substantial revenue for the ILEC.

103. Even in years past, when the existing voice grade loop was originally deployed, its deployment was not based on the future marginal

profitability of the high frequency portion of that loop. Rather the voice grade loop had to be deployed in response to the ILEC's common carrier responsibilities to provide telephone service within the boundaries of its protected service temtory.

104. The significance of the fact that voice grade loops are deployed by the ILECs in order to provide voice grade telephone services in ILEC service territories extends also to the new loops, both copper and fiber-fed, that the ILECs will deploy in the future. **As** new subdivisions are constructed in ILEC service territories, the ILECs will build new loops primarily to provide voice grade telephone services to these customers. The need to construct these facilities will be driven largely by the ILEC's common carrier requirements and not by the expected future value of the high frequency portion of those loops.[45]

105. Since new loop facilities will be constructed to meet new demands for voice grade telephone service, the ILECs' costs for these new loop facilities will almost certainly be recovered fully through the telephone rates that the ILECs will charge. Nevertheless, these new facilities will also include unused high frequency loop portions that can be dedicated to DSL services in the future. Thus, HFPL capacity for DSL will be both constructed and paid for as the ILEC adds new loops to meet new demands for voice grade telephone services in the future.

---

[45] For example, Verizon has publicly stared that its tiber-fed loop deployment will be driven primarily **by** the need to improve its feeder plant to improve POTS **service** quality. ***See*** "Veriron PARTS **Workshop."** Presentation delivered February 26, 2001. at 11, available **at** http://www22.verizon.com/wholesale/clec/east/resources/0206workshop.ppt.)

106. Moreover, since the incremental cost of the high frequency portion of the loop ("HFPL") is costless, it would be extremely difficult to under-price the HFPL through allegedly misguided UNE pricing rules. Again, no investment in existing or new ILEC loop plant is likely to be deterred as a result of shared lines being priced below their minimal cost. For all of these reasons, line sharing with a CLEC does not discourage new investment by the ILEC in the high frequency portion of loops.

Specific Comments of ***ZLEC*** *witnesses Shelanski, Kahn and Tardiff*

107. With respect to the more specific attacks on unbundling of loop facilities, ILEC witness Shelanski does not even suggest that CLEC access to conventional voice loops could be accomplished in any manner other than through unbundling. He states, "The data also show that the case for impairment without unbundling access to conventional voice loops is diminishing..."[46] Dr. Shelanski also cites a 1999 FCC staff report to the effect that "The Commission has itself emphasized the importance of inter-modal competition on the ILEC's in the broadband context in finding that 'the ILEC's aggressive deployment of DSL **can** be attributed in large part to the deployment of cable modem service.'"[47]

108. Of course, as noted earlier in connection with the *EchoStar* Order, the Commission in 2002 explicitly recognized the many significant benefits that flow from intra-modal competition which are simply omitted in Dr.

[46] Declaration of Howard **A.** Shelanski, Par. 44.

[47] Declaration of Howard **A.** Shelanski, Par. **43.**

Shelanski's discussion. Moreover, as noted in the timeline presented at Schedule 3, ILEC entry into the provision of DSL services was clearly motivated by intra-modal competition from CLECs offering DSL services.

109. Drs. Kahn and Tardiff raise the most specific attacks on line sharing. They state that the ILECs "are not only in intense competition with many other companies offering high-speed access, most importantly to the Internet via cable, satellite and wireless transmission; they are markedly behind their main competitors, the cable companies."[48]

110. The viability of each of the broadband competitive alternatives discussed by Kahn and Tardiff have been addressed earlier in this report. With the limited exception of cable modems, none of these alternatives now provide viable competitive alternatives to DSL services for residential and small business customers. Moreover, while, the telephone companies may have lagged "behind' their main competitors in the past, our prior discussion makes clear that lack of competition and ILEC fears of legacy product cannibalization were the real reasons why ILEC deployment of DSL services faltered so dramatically in the mid-1990s.

111. Drs. Kahn and Tardiff also state that "The obligation to offer competitive access providers use of the high frequency portion of those lines –thereby excluding their own use of the lines for that purpose—clearly biases the economics of that decision, because, unlike providers of cable modems, the ILECs would be forced to share potential DSL volumes with CLECs,

[48] Declaration of Alfred Kahn and Timothy Tardiff, Par 38

who in turn would receive access to customers at very attractive prices (because of line sharing)[49] (Emphasis Added).

112. With respect to the claim that cable modem providers need not share "potential DSL volumes" with CLECs, it again should be emphasized that, for the many reasons noted earlier in this Declaration, cable modem service is itself different from and, in many ways, inferior to DSL services for broadband access. For this reason, the focus by Kahn and Tardiff, not on service features and prices, but on a single alleged difference in regulatory treatment is basically meaningless.

113. If one wishes to compare cable and telephone company regulation, why focus only on a single difference in the overall regulatory regimes that each firm faces? Cable TV providers face not only their own franchise regulations but also numerous issues attendant on the fact that, unlike ILECs, cable TV companies must purchase programming as well as equipment from unaffiliated suppliers. In addition, they face continuing regulatory restrictions as to certain programs to be carried. Even if one sought to compare cable and ILEC regulatory burdens and opportunities, that comparison is nowhere found in the Kahn/Tardiff Declaration.

114. **Also,** with respect to the Kahn and Tardiff claim of bias in favor of the CLECs, it is particularly interesting that Drs. Kahn and Tardiff omit any reference to the "very attractive prices" at which the ILECs themselves would receive access to customers for the provision of DSL services. The

[49] Declaration **of Alfred** Kahn **and** Timothy **Tardiff.** Par. 38

minimal costs associated with accessing the high frequency portion of the loop would of course be the same for the ILEC as well as the CLECs. If a retail customer chooses to purchase DSL services from the ILEC, either in the first instance, or in a win-back from the CLEC, the HFPL simply reverts to the ILEC. There is no bias either in pricing or in access to these underlying facilities. For these reasons, there is no bias as between CLECs and ILECs for the provision of shared loop facilities.

115. Finally, Kahn and Tardiff argue that since the ILECs do not now share all-fiber-loops with CLECs, at some future point that they may have to "unbundle the fiber as well – precisely the kind of extremely expensive risky new investment to which the logic of mandatory network element sharing is least applicable and most inhibiting of dynamic competition."[50] Although the focus of this declaration is the line sharing unbundled network element, several brief points seem in order to respond to ILEC claims regarding other UNEs, such as all-fiber loops.

116. What Kahn and Tardiff imply is that, because the retail revenue stream to the ILEC could be lower when it provides the loop at a wholesale UNE rate than when it uses the same loop for its retail service, the prospect of unbundling somehow diminishes the incentive of the ILEC to invest in that loop. In fact, the history of ILEC DSL deployment clearly suggests that it is the maintenance of a monopoly that disincents ILEC network investment. Kahn and Tardiff ignore the disincentives to ILEC investment fostered by loss of any revenue stream whatsoever for service over the

[50] Declaration of Alfred Kahn and Timothy Tardiff, Par. 38

loop – for example, if a customer switches to the network of a duplicate, alternative loop provider. Indeed, it appears clear that the only scenario in which the ILEC would face the least risk to its network investment is a scenario in which it remains the only available service provider. For the reasons already discussed, such a scenario can readily be dismissed as failing to produce the levels of innovation, price competition, demand stimulation and investment produced in a competitive market. The history of ILEC DSL deployment provides ready confirmation of this fact.

VI. Gains in Consumer Surplus from CLEC Entry

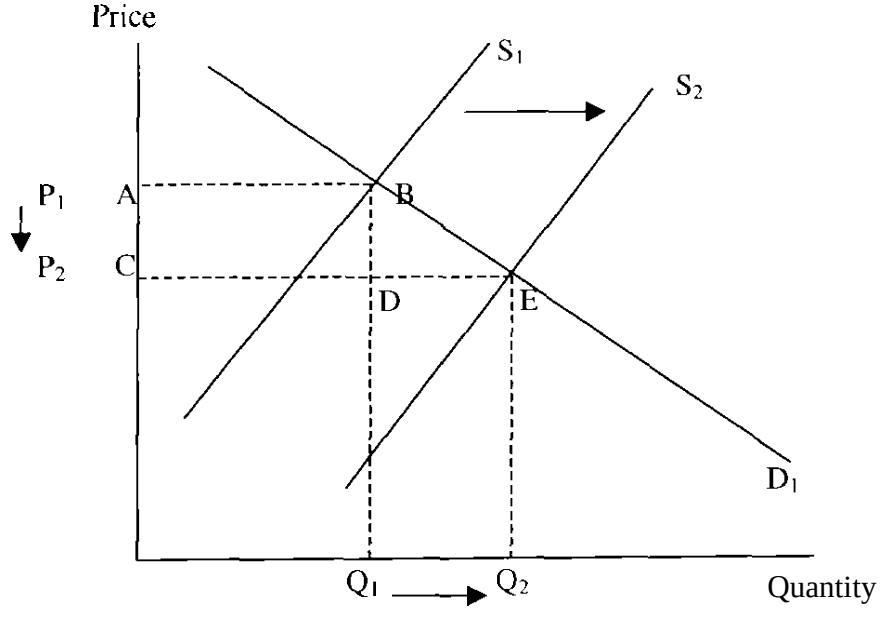
A. Measurement of Consumer Benefits from CLEC Entry

117. Consumer surplus is the difference between the total value that consumers place on their consumption of a good or service and the payment they make for the good or service. All else equal, if the price paid for a good or service declines, consumer surplus increases and consumers are better off. Consumers in markets for ADSL broadband Internet access benefit from the increased competition due to CLEC entry. To estimate such benefits, we calculate the change in consumer surplus for the **ADSL** residential and small business customers after CLEC had a significant entry. Since market demand is an aggregation of consumers' willingness to pay for a good or service, consumer surplus is the area under the demand curve and above the price line in a demand and supply diagram. This methodology of using changes in consumer surplus to evaluate consumer benefits from a policy is supported by microeconomic theory and is used by the **US** antitrust agencies in evaluating consumer savings from merger enforcement.[51]

[51] Both the Federal Trade Commission and the Department of Justice Antitrust Division estimate consumer *savings by multiplying* an estimate of the price increase that would have resulted but for the agency's merger enforcement by the volume of commerce in the relevant market. See Antitrust Division Congressional Submission for Fiscal Year 2001 and Prepared Statement of the Federal Trade Commission on Antitrust Enforcement Activities, Delivered by Chairman Robert Pitofsky, Before the Committee on the Judiciary, U.S. House of Representatives (April 12,2000). This is an approximation to the loss of consumer surplus that would have resulted if an anticompetitive merger were approved. In our case, we have the advantage of being able to observe actual prices and volumes at least in estimating realized gains in consumer surplus due to the CLEC entry.

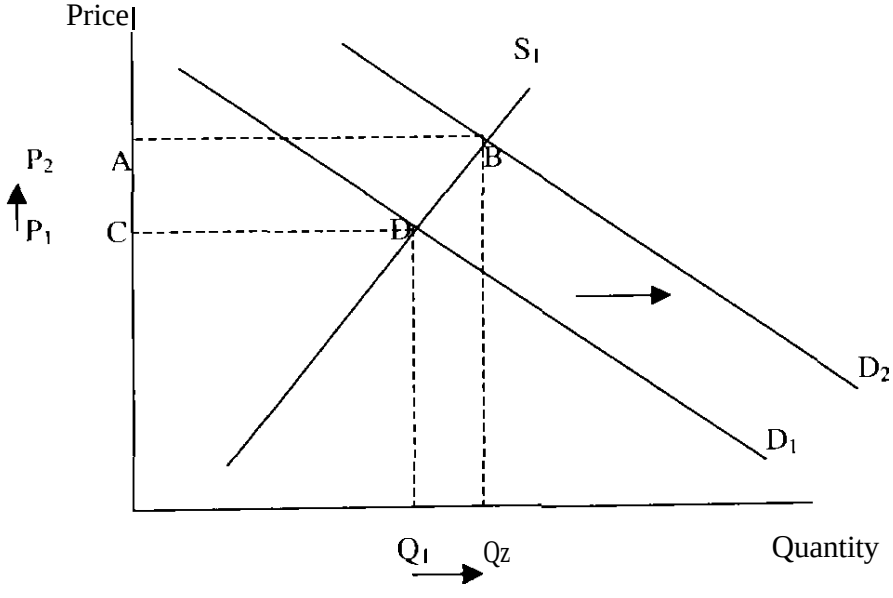
118. To begin with, let's look at a simple scenario where demand for ADSL remains constant during the course of the CLEC entry. **Figure 1** shows that the CLEC entry causes the supply curve to shift out. **As a** result, output increases from Q_1 to Q_2 and price drops from P_1 to P_2. The consumer surplus before the entry is the area under the demand curve D_1 and above the price P_1. After the entry, consumer surplus becomes the area under the same demand curve (since demand is assumed constant) and above the new market price P_2. In this example, total consumer surplus has increased. The <u>increase</u> in consumer surplus is the area ACEB.

Figure 1: Supply Shift Due to CLEC Entry



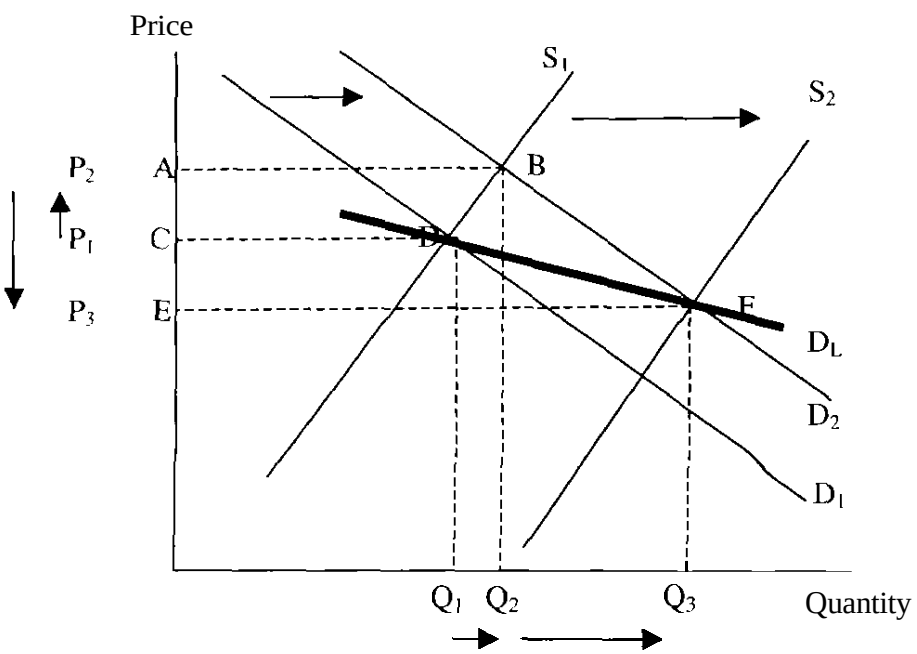
119. Let's look at another scenario, where there is no CLEC entry so that the supply curve in the ADSL market docs not shift. However, in this example we assume that the demand for **ADSL** continues to grow over time. In this example, price will go up. **Figure 2** illustrates this scenario. Demand shifts out from D_1 to D_2. As a result, output increases from Q_1 to Q_2 and price goes up from P_1 to P_2. This means the ADSL market will grow slowly driven by the demand growth. But consumers will have to pay a higher price for the service.

Figure 2: Demand Shift without CLEC Entry



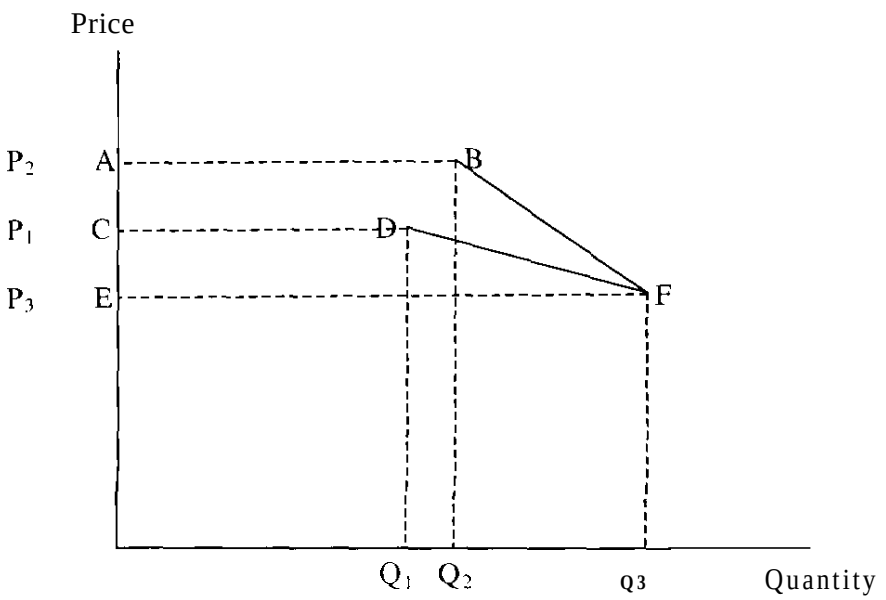
120. **A** more realistic scenario combines the above two scenarios, where demand for broadband internet access grows over time and supply increases due to the CLEC entry. This is shown in **Figure 3.** ***At*** the beginning. the market is described by demand D_1 and supply S_1, where market output is Q_1 and market price is P_1. The demand growth and the CLEC entry may happen simultaneously. For clarity of our analysis, we decompose the changes in demand and supply into a sequence. First, demand shifts from D_1 to D_2. This causes output to increase from Q_1 to Q_2 and price to increase from P_1 to P_2. Then supply increases due to the entry of CLEC. **As** a result, supply curve shifts from S_1 to S_2. Output increases further to Q_3 and market price drops to P_3. Data of the ADSL market shows that this drop in price more than offsets the price increase effect of the demand growth, as shown **in Figure 3.**

Figure 3: Demand Shift and Supply Shift Due to CLEC Entry



121. The change in consumer surplus due to the CLEC entry is the area **AEFB** in **Figure 3.** This area **is** difficult to measure precisely without enough data on price, output, and demand factors that shift the demand curve. Since demand and supply changes happen simultaneously, in reality we only observe two data points D and F, not B. The demand curve connecting D and F is indeed a demand curve of longer term (D_L). We can estimate the change in consumer surplus under this long term demand curve, which is area CEFD. Under a linear demand curve, we have: Area CEFD=((P1-P3)*Q1+(P1-P3)*(Q3-Q1)/2)*12 for one year. **Figure 4** is the simplified version of **Figure 3.** Notice that area **CEFD** is what we will estimate, which is a smaller area than the true increase in consumer surplus, area AEFB.

Figure 4: Gains in Consumer Surplus Due *to* CLEC Entry



122. Notice that the assumption of the shape of the demand curve, though will affect the calculation of area CEFD, does not affect the observation that area CEFD is smaller than area AEFB. Thus by calculating area CEFD. we in effect underestimate the consumer benefits from the CLEC entry.

B. Gains in Consumer Surplus from 1999-2002

123. As shown in schedule 3, Verizon's initial DSL deployment envisioned a monthly price of $69.95. Only after several CLECs entered the DSL market throughout 1998, and under the pressure that the FCC would adopt line-sharing rules, which it did in 1999, Verizon started to cut its price, first to $59.95 on October 1998, then to $49.95 on April 1, 1999, and most recently $39.95 in October 2002. The average price weighted by the number of months, in which a price is applicable, for 1999 is $52.45, and for 2002 is $47.45.

124. As shown earlier in this declaration, there were 291,757 residential and small business ADSL lines as of December 1999,772,272 lines in June 2000, and 2,490,740 lines *in* June 2001. For 2000 and 2001, the June data should be about the average number of lines in the year. For 1999, we assume the average number of lines is half of the December number, that is, 291,757/2=145,879. Data on the number of residential and small business ADSL lines are not available for 1998. We conservatively assume that there were only one-tenth of the number of lines in 1999, that is, 145,879/10=14,588.

125. If we use Verizon prices as the average prices for all ILECs and CLECs for these ycars, then we can estimate gains in consumer surplus from 1999 to 2002 for residential and small business customers. We are being conservative in this calculation for two reasons: (I) we ignore installation fees, which were also dropping in this time frame; (2) Covad's prices fell to a lower level than the ILECs charged. In June 2002, Covad announced that its TeleSurfer Link product was priced at $21.95 for the first four months and $39.95 thereafter, with free equipment and installation and no annual contract.

126. The area CEFD for 1999 is: [($69.95-$52.45)* 14,588+($69.95-$52.45)*(772,272-14,588)/2]*12=$16,848,967. Similarly, the area CEFD for 2000 is: [($69.95-$49.95)* 14,588+($69.95-$49.95)*(772,272-14,588)/2]*12=$94,423,182, and the area CEFD for 2001 is: [($69.95-$49.95)* 14,588+($69.95-$49.95)*(2,490,740-14,588)/2]*12=$300,639,342.

127. The actual number of ADSL lines is not available for 2002. But we can calculate expected gains in consumer surplus for 2002 based on the forecast of the number of **ADSL** lines. Securities analysts at J.P. Morgan forecast the number of ADSL lines subscribed.[52] This forecast is different from numbers shown in the FCC survey and J.P. Morgan does not forecast specifically the number of residential and small business ADSL lines. For proper comparison, we impute the number of residential and small business ADSL lines from J.P. Morgan's forecast of total number of

[52] Industry Update, J.P. Morgan Securities Inc., September 17, 2002

ADSL lines. For 2001, J.P. Morgan's estimate of total ADSL lines is 3,166,000, while FCC's survey shows that there were 2,490,740 residential and small business lines. The ratio between the two numbers is 2,490,740/3,166,000=78.7%. This ratio is used in deriving the expected number of residential and small business lines for future years. For 2002, it is 4,811,000*78.7%=3,784,886. So the area CEFD from 2001 to 2002 is expected to be: [($69.95-$47.45)* 14,588+($69.95-$47.45)*(3,784,886-14,588)/2]*12=$651,454,360.

128. To summarize, the gains in consumer surplus for residential and small business customers from the CLEC entry to the ADSL market due to the FCC's line sharing rules for the past four years (1999-2002) are at least: $16,848,967+$94,423,182+$300,639,342+$651,454,360=$1,063,365,851, or over $1 billion.

129. It is worth noting that our estimates of consumer benefits are conservative for the following reasons: (1) as noted earlier, we estimate a smaller area than the true gains in consumer surplus. The higher the growth in demand, the higher price would be in the absence of CLEC entry, the more we underestimate the consumer gains; (2) we apply the industry average price across the whole year, even though in fact the number of lines increases during the year while lower prices are observed during the later part of the year; (3) average prices based on Verizon's prices are conservative. CLECs generally charged lower prices than ILECs; (4) we ignore installation fees or equipment fees, which also decrease over time,

C. Expected Gains in Consumer Surplus for the Next Four Years

130. Applying the same methodology used in estimating the expected gains in consumer surplus for 2002, we can calculate such expected gains for the next four years (2003-2006).

131. As indicated earlier, Covad offered a new DSL service in June 2002 priced at $21.95 for the first four months and $39.95 thereafter, with free equipment and installation and no annual contract. We conservatively assume that the industry average price will only drop to $29.95 per month in 2006 with line sharing. This is a conservative assumption given that Covad has already offered a promotional price at $21.95. We also assume that this price drop will be gradual. Since the total price decrease will be $39.95-$29.95=$10 during the four year period, we assume that price drops by $2.5 each year. So price will be $37.45 per month in 2003, $34.95 in 2004, $32.45 in 2005, and $29.95 in 2006.

132. J.P. Morgan forecasts that the total number of DSL subscribers will be 6,605,000, 8,062,000, 9,318,000 and 10,422,000 in 2003, 2004, 2005 and 2006, respectively. Adjusted by the 78.7% ratio, we get 5,196,253, 6,342,497, 7,330,611 and 8,199,145. They are the expected number of residential and small business ADSL subscribers for each of the next four ycars with line sharing.

133. Without line sharing, we assume that the average monthly price for ADSL service for residential and small business customers will stay at the 2002 level equal to $39.95. This is a reasonable and probably conservative

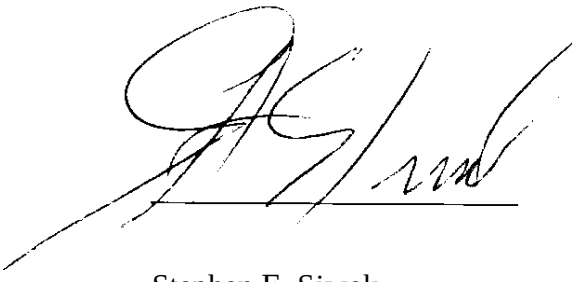
assumption given that with continually growing demand, price would be likely to rise without line sharing.

134. The area CEFD for 2003 is expected to be: [($39.95-$37.45)* 3,784,886+($39.95-$37.45)*(5,196,253-3,784,886)/2]*12=$134,717,093. The area CEFD for 2004 is expected to be: [($39.95-$34.95)* 3,784,886+($39.95-$34.95)*(6,342,497-3,784,886)/2]*12=$303,821,504. The area CEFD for 2005 is expected to be: [($39.95-$32.45)* 3,784,886+($39.95-$32.45)*(7,330,611-3,784,886)/2]*12=$500,197,393. The area CEFD for 2006 is expected to be: [($39.95-$29.95)* 3,784,886+($39.95-$29.95)*(8,199,145-3,784,886)/2]*12=$719,041,865.

135. Thus the gains in consumer surplus for residential and small business customers from the FCC line sharing rules for the next four years (2003-2006) are at least: $134,717,093+$303,821,504+$500,197,393+$719,041,865= $1,657,777,855, or over $1.6 billion.

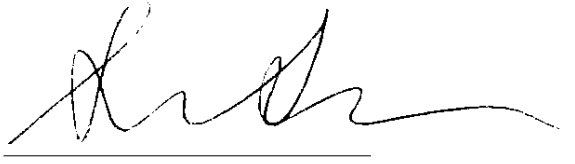
136. Again, we estimate the consumer benefits from line sharing conservatively. In particular, (1) we calculate a smaller area than the true gains in consumer surplus; (2) we use **a** simple average price, not taking into account the fact that a growing number of lines later in a year are likely to be charged a lower price; (3) our assumption that with line sharing price will be $29.95 per month in 2006 is conservative. Given that Covad already offered a promotional price of $21.95 in 2002, actual price in 2006 is likely to be lower than $29.95 that we assumed; (4) our assumption that without line sharing price will be $39.95 per month from 2003-2006 is conservative. $39.95 was a price achieved following

Covad's lead. If line sharing is not allowed and CLECs are out of the **ADSL** market, price is likely to go **back** up.



Stephen E. Siwek

and



Su Sun